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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,957	12/20/2000	Edward B. Gindele	82021RLO	8706

7590 01/29/2004
Patent Legal Staff
Eastman Kodak Company
343 State Sreet
Rochester, NY 14650-2201

EXAMINER

WU, JINGGE

ART UNIT PAPER NUMBER

2623

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/742,957

Applicant(s)

GINDELE, EDWARD B.

Examiner

Jingge Wu

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 15-23, 49-51 and 57 is/are pending in the application.
- 4a) Of the above claim(s) 57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9, 15-23 and 49-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Applicant's election with traverse of species I in paper No. 5 is acknowledged. Regarding to Applicant's argument in paper No. 6, Examiner agrees with the Applicant on grouping the claims 1-9, 15-23, and 49-51. However, in the specification, numbering of the claims after claim 55 is wrong. Claim 57 has been changed to claim 56 and claim 58 has been changed to claim 57. New claims 56-57 are directed to an image pyramid representation. Accordingly, Claims 1-9, 15-23, 49-51 are now presented for prosecution. Claims 10-14, 24-48, and 52-57 are withdrawn from consideration.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5-9, 15, 18, and 49-51 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5461655 to Vuylsteke et al.

As to claim 1, Vuylsteke discloses a method removing noise from a digital image comprising:

receiving an original digital image including a plurality of pixels (fig. 1, element 1);

generating at least one residual digital image and at least one base digital image from the original digital image, the base image having a lower spatial resolution than the original digital image (fig. 3a-3b 30, col. 3-col. 4, col. 7 lines 8-56);

generating a noise reduced base image by removing noise from the base image (fig. 3a and 3b, 32, 33) so that the noise reduced image is combined with the residual digital image to produce a reconstructed image, noise is not present in the reconstructed image (fig. 3a and 3b, 34, col. 3-col. 5 line 18, fig. 4b, col. 7 line 8-col. 8 line 34).

As to claims 2 and 3, Vuylsteke further discloses using the residual image and the noise reduced base image to produce the reconstructed digital image with same resolution (fig. 3b, abstract, col. 7 lines 8-56).

As to claim 5, Vuylsteke further discloses using noise removing filters (col. 8 lines 4-12).

As to claims 6-9, Vuylsteke further discloses generating an interpolated base image by spatially filtering the base image with an interpolation filter; generating the residual image (fig. 4a, col. 7 line 37-col. 8 line 12), calculating the difference of interpolated base image and original image (col. 8 lines 37-62); filtering the noise on the base image to create noise reduced base image, and combining the residual and base images to create reconstruction noise free image by adding residual and base images (col. 8 line 13-34, col. 13 line 25-14).

As to claim 15, Vuylsteke further discloses the noise reduction filter further includes steps of:

identifying the pixel of interest and its neighborhood, calculating the difference of pixel values of the interested pixel and the pixels of neighborhood, using the absolute difference value (variance) to calculate the noise reduction pixels value; and replacing

the value of the pixel of interest with the noise reduced pixel value (col. 8 line 37-col. 12 line 60,).

As to claim 18, the filters is adaptive and changes in response in the local neighborhood of pixels (col. 8 lines 37-62, moving average operation of 15X 15, col. 13 line 25-14, the filter can be view as a sigma filter).

As to claims 49-50, Vuylsteke further discloses noise filtering on the base, and original images (fig. 3a, 3b, and 5). Other limitations are addressed with regard to claims1-3.

As to claim 51, the claim is the corresponding computer storage medium claim to claim 1, the discussions are addressed with regard to claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 16—17, 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vuylsteke.

As to claim 4, Vuylsteke does not explicitly mention the reconstructed image has a lower spatial resolution as that of the original image but mentions the reconstructed image could be close approximation of original image (col. 5 line 1-7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use scheme of Vuylsteke to create lower resolution

reconstructed image by adding less base images to residual image to achieve the purpose reduce noise and resolution at same time.

As to claim 16-17, Vuylsteke does not explicitly mention the thresholding scheme.

Examiner takes Official Notice that this feature is notoriously well known in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the thresholding scheme to reduce the noise level and computation level for the noise reduction.

As to claims 19-23, Vuylsteke does not explicitly mention median filter, bilinear interpolation filter, bicubic interpolation filter, and original color image, etc.

Examiner takes Official Notice that those features are notoriously well known in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use those features in the method of Vuylsteke in order to achieve fast computation and less noise on the color image.

Contact Information

Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally be reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (703) 306-0377.

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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 872-9314.

Jingge Wu

Primary Patent Examiner

